Habitat preference of Roan Antelope (Hippotragus equinus, Desmarest, 1840) In Kainji Lake National Park, Nigeria.

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ABSTRACT.

The habitat preference of Roan Antelope was assessed during wet and dry seasons in Borgu sector of Kainji Lake National Park (KLNP) from the month of May 2007 to April 2009. In each of the habitat types, Roans were sighted and counted. Total enumerations of woody plants above one meter in height were carried out taking records of plant species in three (10m x 10m) plots. The collected data were pooled together. The result showed a total of Thirty five plant species and their distribution. The following plant species; Combretum spp, Detarium microcarpum, Grewia mollis and Gardenia spp. occurred in the six habitats types of Roan antelope. Burkea africana, Kigelia africana, Lannea acida, Maytenus senegalensis occurred in five habitat types. In the wet season, 37 Roans were counted in Burkea – Detarium habitat. In the dry seasons, 34 Roans were counted in Burkea – Detarium habitat. The most preferred habitat for Roan Antelope irrespective of season was Burkea – Detarium with 36 Roan antelope as the highest average number observed in the study.

Key words: Habitat Preference, Roan Antelope, Seasons.

INTRODUCTION

Habitat quality and quantity have been identified as the primary limiting factors that influence animal population dynamics (Jansen *et al*., 2001). Habitat influences the presence, abundance, distribution, movement and behavior of game animals (Musila *et al*., 2001). A major problem facing wildlife conservation is increasing rate of habitat loss due to human activities through the destruction of their natural habitats leading to the reduction in wildlife population (John and Skorupa, 1987). Similarly Afolayan *et al*., (2004) observed that about 75% of the original wildlife habitat in Nigeria has been lost. This has also affected wildlife resources within these ecological systems. The roan have strictly defined habitat requirements and grazing preferences, and because the survival of their calves is so dependent on optimal habitat conditions, roan antelope are particularly susceptible to habitat degradations (Furstenburg,2004). This makes the species a telling indicator their ecosystemôs health. The loss of Roan from large areas of their distribution range serves as a tragic reminder of the loss of ecological qualities in those areas. Roan antelope habitats are definable less by exact composition of plants than by the scarcity of

other herbivores. Even within very diverse communities of herbivores, roan prefers localities in which there are few competitors and carnivores. In many areas they have distinct wet and dry season ranges, dispersing in the former and concentrating in the latter (Skinner, 2005). Areas of a few square kilometers are grazed intensively for weeks or even months but overall ranges in South Africa have been estimated at 60 ï 120 km^2 (Young, 1992). In Tanzania, a herd of 14 animals was seen to inhabit an area of 12km^2 over a period of 17 years. Institute of Applied Ecology (1998) reported that roan inhabit lightly wooded country and grasslands throughout most of Central and West Africa; they also prefer wooded savanna to woodland which sprouts after burning in the kainji lake national park (Ayeni, 2006). The objective of the study was to determine the habitat preference of Roan antelope in Kainji Lake National Park.

MATERIALS AND METHODS

Study Area:

The study was conducted in Borgu sector of Kainji Lake National Park which covers an area of 3,970.02 km^2 . The park is located at the boundary between the Sudan and the Northern Guinea Savanna (Keay, 1959) and lies between latitude 9^0 40' and 9^0 23' N and longitude 3^0 40'and5^0 47'E (Fig.1). The Major vegetation types of the park includes: *Burkea africana – Detarium microcarpum* wooded savanna, *Isoberlinia tomentosa* woodland, *Diospyros mespiliformis* dry forest, *Terminalia macroptera* tree savanna, *Isoberlinia* savanna woodland, Riparian forest woodland and Oli river complex. The two major features of the climate of the park are the division into wet and dry seasons and the variability from year to year. The wet season extends from May to October. The mean annual rainfall varies from 1,100mm in the eastern part to 1,150mm in the West part. The lowest temperature of the park about 12^0C occurs between December and January. The highest mean maximum temperature occurs during months of February, March and April and is about 35^0C (Afolayan,1978).

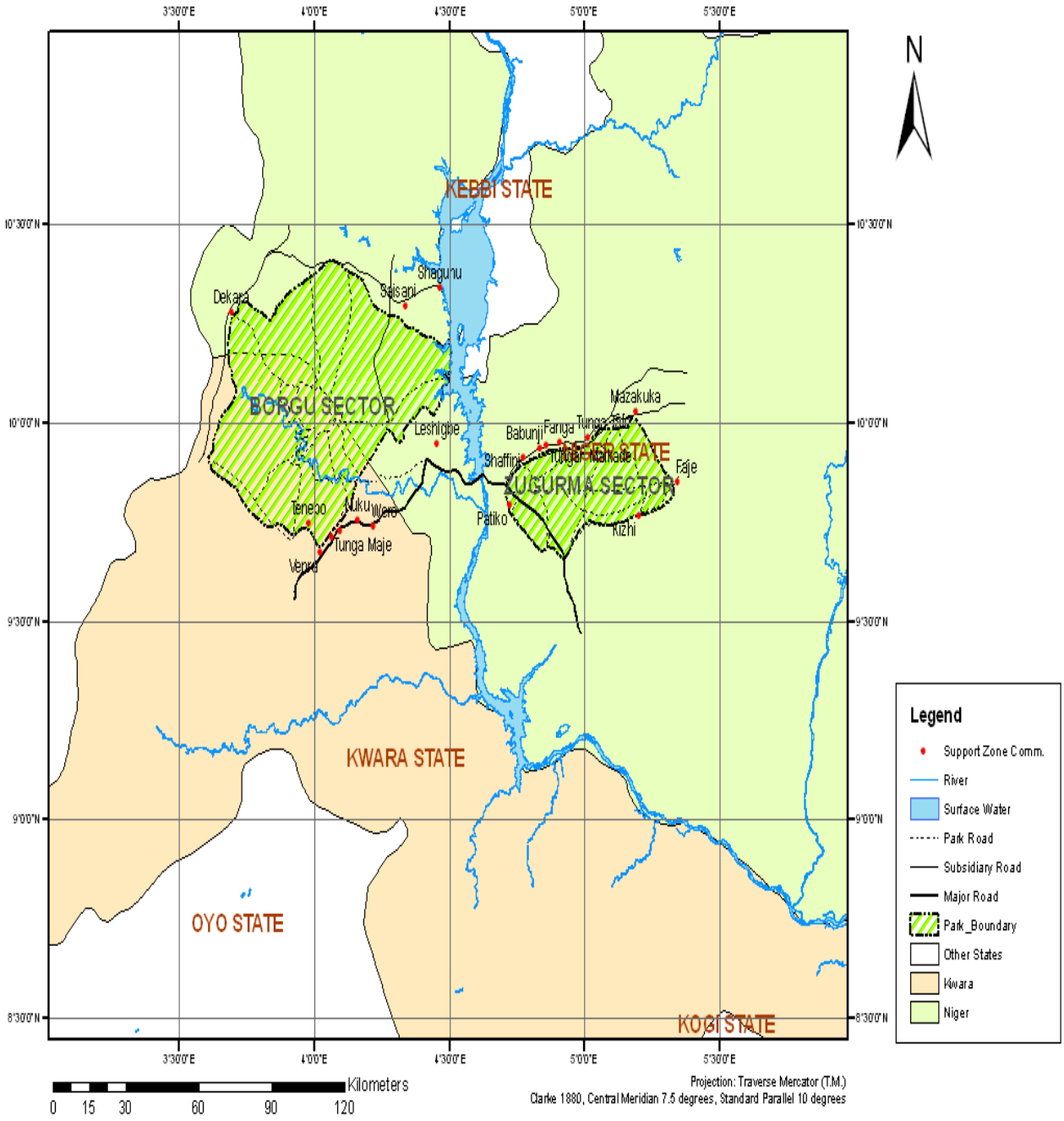

Figure 1: Map of Kainji Lake National Park showing Borgu and Zugurma Sectors.
SOURCE: Tuna (1992)

Methods: The study adopted a modified line transect count method by using Jeep tracks as

transects. Ten transects were randomly selected and used for the survey. Observations were made on the population of Roan antelope from a Hilux pick up van. Binoculars were used to aid sightings at far distances of >100m. At each sighting, records were made of the habitat / vegetation types, number of individuals of Roans sighted and recorded in Wildlife census data sheet. Surveys were made between 07.00 hrs ï 11.00 hrs and 16.00 hrs ï 18.00 hrs GMT daily for 120 days for 840 hrs from May 2007 ï April 2009, thus spanning two wet seasons(May ï October) and two dry seasons (November ï April). Within each of the habitat type in which Roans were sighted and counted; total enumeration of woody plants above a meter in height were carried out taking records of plant species in three (10m x 10m) plots.

Data Analysis:
Data collected were pooled together and analyzed using simple descriptive statistics and presented in Bar diagram and Table.

RESULTS
Six Roan habitat types were recorded in the study with Thirty five plant species and their distribution (Table1.) The following plant species; *Combretum spp, Detarium microcarpum*, *Grewia mollis* and *Gardenia spp,* occurred in all the six habitats. *Burkea africana*, *Kigelia africana, Lannea acida, Maytenus senegalensis* were present in five habitat types. The result further showed twenty two, seventeen, Nineteen, twenty three, twenty and twenty three species occurring in the six habitats : *Afzelia africana* (A), *Burkea – Detarium* (B), *Terminalia* (c), *Oli river complex* (D),*Isoberlinia* (E) and Riparian forest (F) respectively. The highest numbers of 37 Roans were sighted in the *Burkea – Detarium* habitat during wet season. The *Afzelia africana* woodland recorded 15 Roans in wet season. The least record of 5 Roans were sighted in the *Terminalia* woodland. The Riparian, *Isoberlinia* and Oli river complex habitats supported 11, 9, 6 and 5 Roans respectively in the wet season. Similarly, in the dry season, the *Burkea – Detarium* habitat supported 34 Roans in the dry season. *Afzelia africana* habitat supported 14 Roans in the dry season. While Riparian, *Isoberlinia,* Oli River and *Terminalia* habitats recorded; 9, 8, 6 and 4 Roans respectively in the dry Seasons (Figure 2). The *Burkea - Detarium* had 36 Roans followed by 15 Roans in *Afzelia africana* in the whole study. The Riparian, *Isoberlinia* and Oli River habitats had recorded; 10, 9 and 6 Roans respectively in the whole study (Figure 3).

Table.1 Woody plants species composition in Roan Antelope Habitat in Kainji lake national park:

S/no	Species name	Habitat Type					
		A	B	C	D	E	F
1.	*Afzelia africana*	+	+	-	-	-	-
2.	*Acacia spp.*	+	+	-	+	-	+
3.	*Anona senegalensis*	-	+	+	+	-	+
4.	*Anogeissus leiocarpus*	-	-	+	+	-	+
5.	*Burkea africana*	+	+	-	+	+	+
6.	*Bridelia ferruginea*	-	-	+	+	-	+
7.	*Combretum spp.*	+	+	+	+	+	+
8.	*Crossopteryx febrifuga*	-	+	-	-	-	+
9.	*Cochlospermum tinctorium*	-	+	-	+	+	+
10.	*Detarium microcarpum*	+	+	+	+	+	+
11.	*Daniella oliveri*	+	-	+	+	-	-
12.	*Diospyros mespiliformis*	-	-	-	+	+	-
13.	*Entanda africana*	+	-	-	-	-	-
14.	*Grewia mollis*	+	+	+	+	+	+
15.	*Gardenia spp*	+	+	+	+	+	+
16.	*Hymenocardia acida*	+	-	-	-	+	+
17.	*Isoberlinia doka*	+	-	-	+	+	-
18.	*Khaya senegalensis*	-	-	-	+	-	-
19.	*Kigelia africana*	+	-	+	+	+	+
20.	*Lannea acida*	+	-	+	+	+	+
21.	*Monotes kestiingii*	+	-	-	+	+	+
22.	*Maytenus senegalensis*	+	-	+	+	+	+
23.	*Nauclea latifolia*	+	-	+	-	+	-
24.	*Prosopis africana*	+	+	+	-	-	+
25.	*Pterocarpus erinaceous*	+	+	-	-	+	-
26.	*Piliostigma thonningii*	-	+	+	+	-	+
27.	*Parinari polyandry*	-	+	-	-	-	-
28.	*Strychnos spinosa*	+	-	-	-	-	+
29.	*Sterculia setigera*	-	-	+	-	+	-
30.	*Stereopermum kunthianum*	-	+	-	-	+	+
31.	*Terminalia spp.*	+	+	+	+	+	+
32.	*Termarindus indica*	-	-	+	-	-	-
33.	*Vitellaria paradoxa*	+	+	+	+	+	+
34.	*Vitex doniana*	+	-	-	+	-	-
35.	*Ximenia americana*	-	-	+	+	+	+

KEY. **A = *Afzelia africana*** **B = *Burkea/Detarium*** **C = *Terminalia* woodland** **D = *Oli River* Complex**
E = *Isoberlinia* woodland ***F= Riparian Forest*** **+=Present** **-=Absent**

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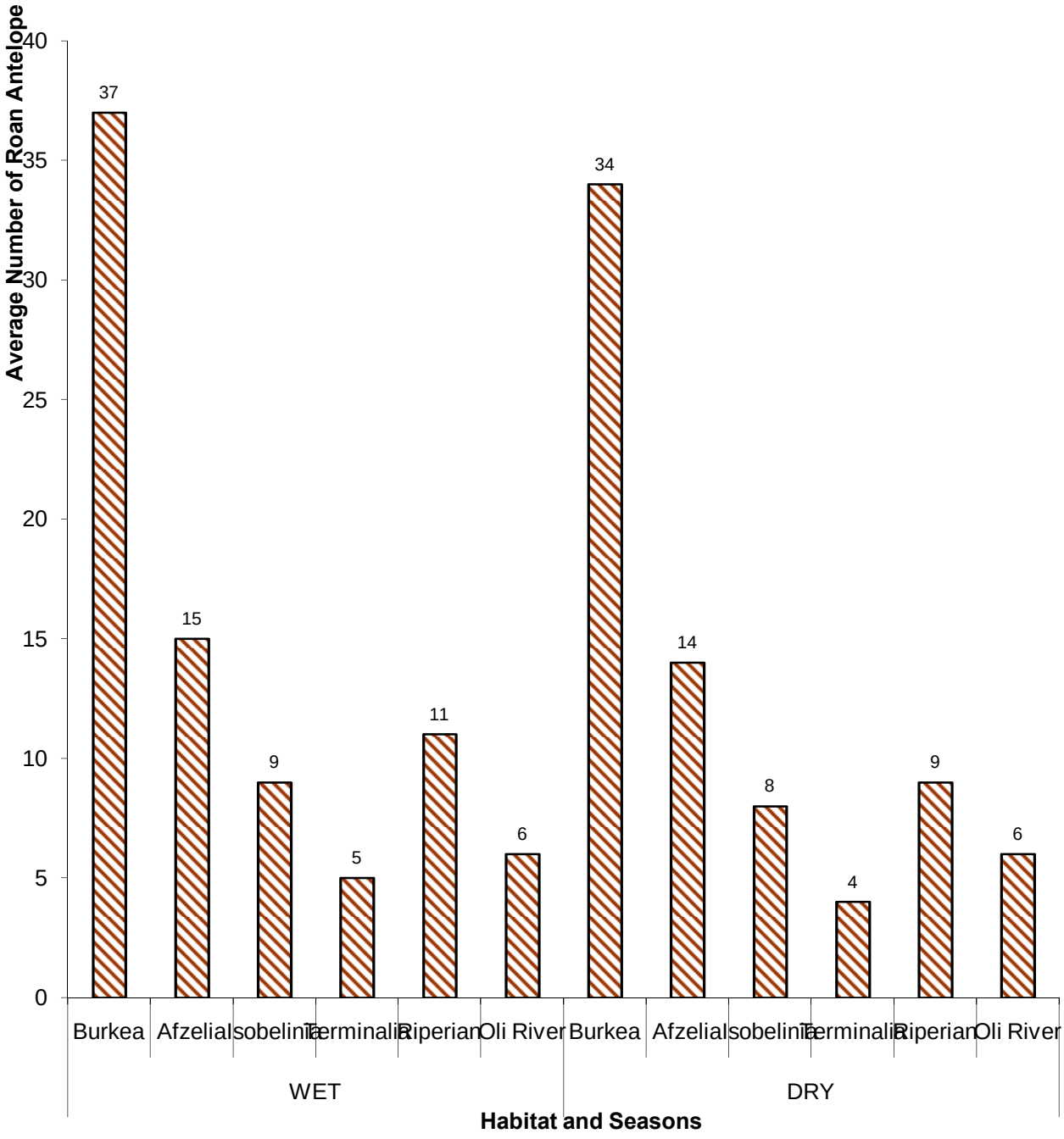

Figure2. Average Number of Roan Antelopes in Different Habitats at Different Seasons at KLNP

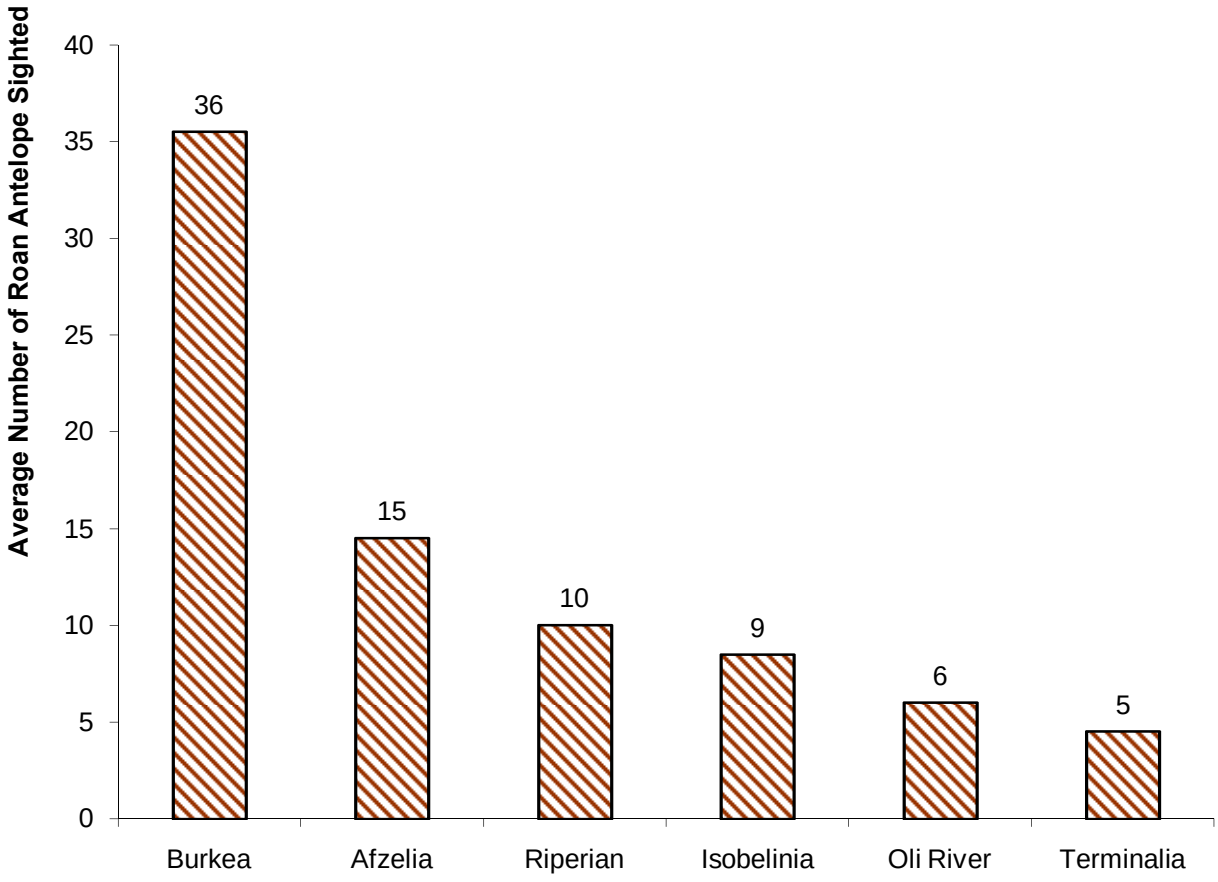

Figure 3. Habitat Preference of Roan Antelope at Kainji Lake National Park

DISCUSSION

In the present study, the sighting of Roan antelopes in the six habitat types clearly depicts the *Burkea – Detarium* wooded savanna as the most preferred habitat for Roan in the studied area. The *Burkea-Detarium* habitat is located upland and comprises of lightly wooded savanna with medium to tall grasses which are preferred by Roan Antelope. The second habitat of choice is the *Afzelia africana* which is also located upland and comprises of lightly wooded savanna with short grasses which are grasses which are also preferred by Roans. In the *Isoberlinia* woodland habitat Roans were resting in shaded places to avoid hot sun. Roans were observed drinking water and feeding in Riparian habitat during dry season. It was also observed that Roan frequently visited salt licks close to Roan gate and Oli river complex. Jansen *et al.,* (2001) reported that, food and cover plays an important role in habitat selection of animals. However, Dunn (1993a) suggested that, in nature wild animals are not evenly distributed all over the habitat in any habitat. He further stated that distribution of animals varies with time or seasons. Therefore conservation of wildlife within protected areas depends mainly on maximizing the numbers of habitat patches that supported self ï sustaining populations. It is quite clear from the study that, *Burkea – Detarium* habitat is the most preferred habitat for Roan antelope in Borgu sector of Kainji Lake National Park. Therefore it is important adequate protection of the *Burkea – Detarium* habitat and as well as other associated habitats to ensure the protection of Roan species. The results of the study are relevant to the management of the Roan. Roan as the star species in the National park for tourism aspect, the Park authority should give priority to conserve it immediately through habitat management.

In conclusion, it is quite clear from the study that *Burkea Detarium* habitat is the most preferred habitat for Roan antelope in Borgu sector of Kainji Lake National Park. Therefore it is important that adequate protection should be given to the habitat while ensuring that the other habitats are improved upon since the animal also make use of them as well..The results of the study are relevant to the management of Roan. Roan as a star specie in game viewing and tourism should engage the attention of the park conservatorsû

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